Code: 1379 **Fertilizers and Fertilizing Techniques**
Degree: 2nd cycle – Agriculture
Stream: Agriculture and Animal Production; Agricultural Engineering; Horticulture
Curricular Year: 1st **Semester Course: 2nd**
Credits: 6 ECTS **Optional**
Language: Portuguese/English
Responsible: Ernesto José de Melo Pestana de Vasconcelos
Other lecturer(s): Henrique Manuel Filipe Ribeiro and Francisco Cardoso Pinto
Web Site: http://www.isa.utl.pt/home/node/3794

1. Contact hours:
Lectures 38 **Praticals/Laboratory** 32 **Others** 14 **Total** 84

2. Objectives:

To inform and elucidate the students under theoric-practical integration on the following points:
- New fertilizers
- Efficient use of fertilizers in Agriculture
- Better way to use by-products of the agricultural, food and forestry industries in agriculture. Complementary information about composts of municipal solid wastes and sludges of wastewater treatment plant.
- New techniques of fertilization, namely the fertigation
- To develop work aptitudes related with fertilization of intensive cultures and nutritional solutions preparation
- Substratum characterization and use for soilless cultures.
- To know the analytical tools related with the thematic of this course.

3. Programme:

Lectures
Fertilizers classification. Revision of conventional fertilizers
Fertlizers and efficient use of nutrients
Slow and controlled-release and stabilized fertilizers
Valorization and utilization of agricultural residues as fertilizers
Sewage sludge and biosolids
Principals substrates for fertirrigation and soilless cultures
Fertirrigation and soilless tecnhiques
Praticals
irrigation and fertirrigation water quality
Nitrate determination in fresh agricultural produits
Organic fertilizers analyse
Nutrients solutions formulation
Intensive cultures fertilization
Study visits

4. Bibliography:

Main Bibliography

Santos, J.Q.1991 – Fertilização. Fundamentos da utilização de adubos e correctivos. Ed. Castro, F.L. Pub. Europa-América , Mem Martins
Cadahia, L. 2005 – Fertirrigation. Cultivos hortícolas, frutales y ornamentales. Ed. Mundi-Prensa Madrid
Tisdale S.M et all. 1985 – Soil fertility and fertilizers. Macmillan Pub. Co., New York
Trenkel M.E. 1997 – Controlled-release and stabilized fertilizers in agriculture. Publ. by IFA , Paris
Vasconcelos E.. 2005 - Algumas considerações sobre fertirrega.. DQAA, 20 p.
Vivancos, A.D. 1997 – Tratado de fertilizacion. 3ª ed. Ed. Mundi-Prensa

Other Bibliography

Agricultural chemicals and the environment 1996 – Issue nº 5 of "Is in environ Sci and tech", Hester,RE and Harrison,RM eds, The Royal Soc of Chem.
Fertilizers and environment 1994 – Proc. Int. Symp. "Fert. and Env. ", Hester,RE and Harrison,RM eds
Finck A 1982 – Fertilizers and fertilization. I Verlag Chemie, Weinheim
Gomez J 1992 – Fertilizantes de liberacion lenta. Ed Mundi-Prensa
Mineev VG 1983 – Maximizing the efficency of mineral fertilizers. In *Efficient Use of Fertilizers in Agriculture* , Nijhoff M. e Junk W. Pub 1-21
Vivancos AD 1997 – Tratado de fertilizacion. 3ª ed Ed Mundi-Prensa

5. Assessment:

- Presentation of a final work by a group of two pupils, with the maximum of 20 pages (TF).
- Elaboration of a group report related with the subject of each practical lesson (Rn).
- Written evaluation test on all the course subjects (TE).

FC =TF x 0,30 + [(R1 +R2 +… + Rn) /n] x 0,3 + TE x 0,40 TE

FC- Final classification

6. Estimated Workload: 168 Hours

7. Last Update: 19/7/2010